

AMT2110A
8 – 12GHz Power Amplifier Chip



Key Features :

- Frequency : 8 – 12GHz
- Typical small signal gain : 38dB
- Typical output power : 46dBm@8-11GHz
44dBm@11-12GHz
- Typical power added efficiency : 38%
- Supply voltage : 28V, -2.2V
- Chip dimensions : 4.35mm x 3.2mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT2110A chip is a high performance high efficiency 8 – 12GHz power amplifier, it is designed based on 0.25µm gate length Gallium Nitrate (GaN) HEMT process, with ground through metal via on the back technology. All chip products are 100% RF tested. AMT2110A is with dual voltage supply, drain voltage Vds at 28V, it provides 46dBm output power in 8 – 12GHz frequency range.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	35V	
Id	Drain Current	6A	
Vg	Gate Voltage	-1.2V	
Ig	Gate Current	150mA	
Pd	DC Power Consumption	168W	
Pin	Input Signal Power	30dBm	
Tch	Operating Temperature	225°C	
Tm	Sintering Temperature	310°C	30s, N ₂ protection

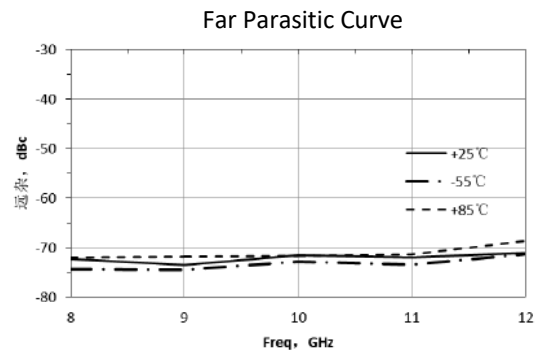
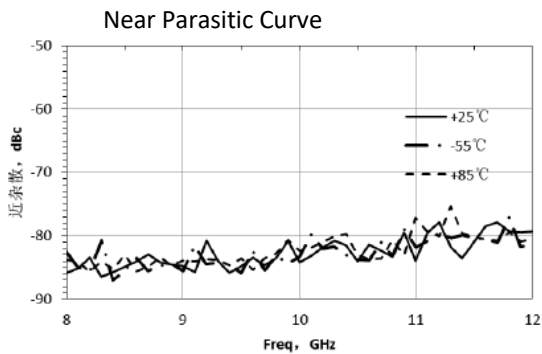
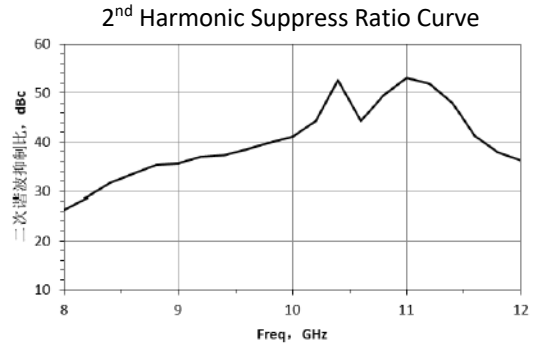
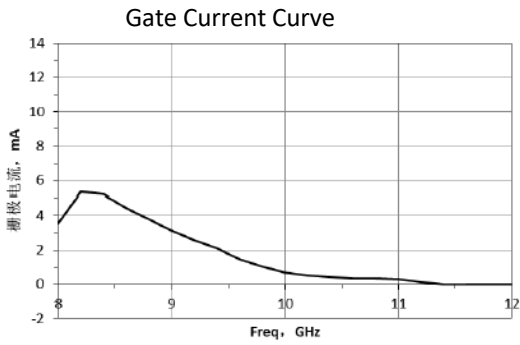
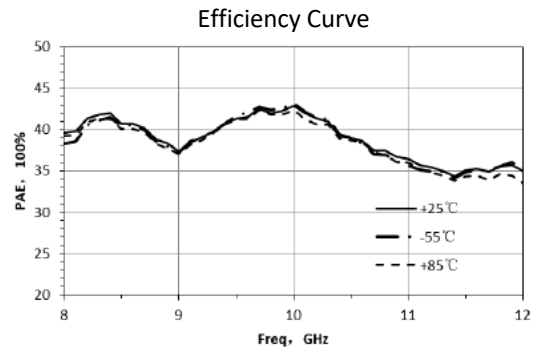
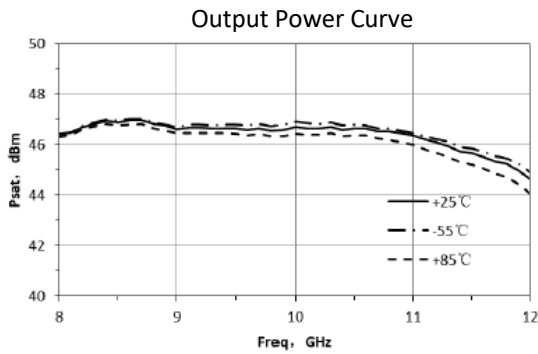
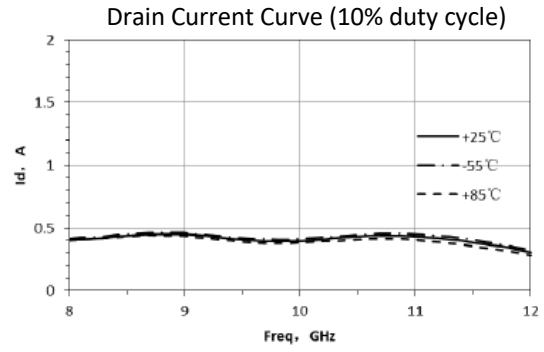
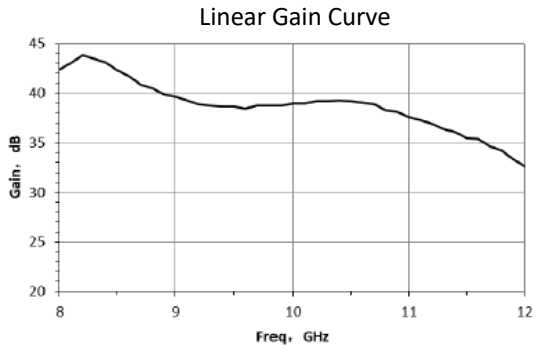
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

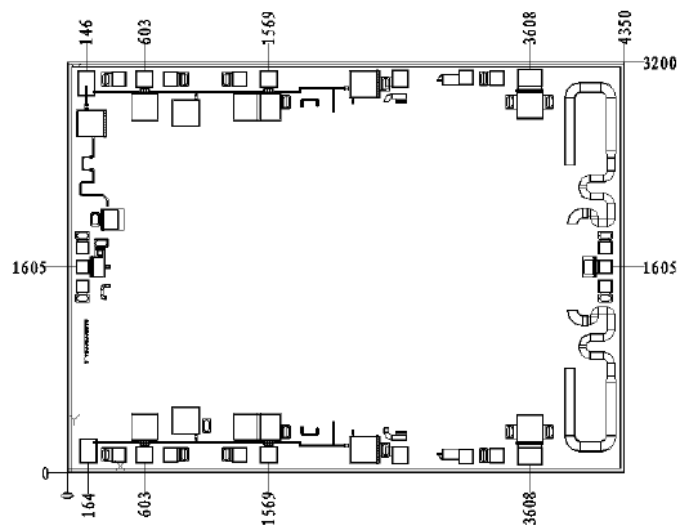
Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
Gain	Small Signal Gain	Vd = 28V Vg = -2.2V F : 8~12GHz Duty Cycle : 10%	-	38	-	dB
VSWRin	Input SW		-	-	2	
Gp	Power Gain		-	25		dB
Psat	Saturated Output Power		44	46	-	dBm
PAE	Power Added Efficiency		-	38	-	%
Id	Operating Current		0.3	0.4	0.5	A

Note, under non-CW operation.

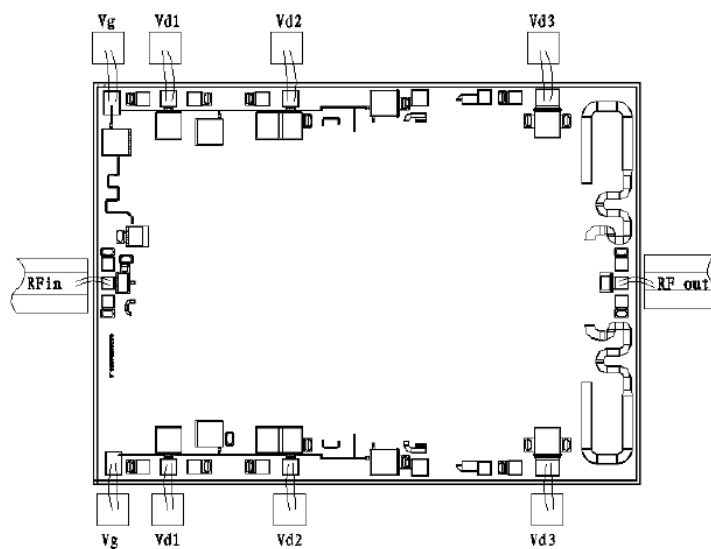
Typical Performance



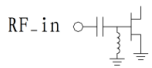
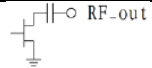




Chip Dimension (Unit : μm)



Chip Layout Diagram



Pad Definition

Symbol	Function	Dimension	Equivalent Circuit
RF_in	RF signal input port, connecting to external 50Ω system. no need to add DC blocking capacitor.	120*100μm ²	
RF_out	RF signal output port, connecting to external 50Ω system, no need to add DC blocking capacitor.	120*100μm ²	
Vg	Amplifier gate bias, need external 100pF, 1000pF capacitor.	150*150μm ²	
Vd1	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*150μm ²	
Vd2	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*150μm ²	
Vd3	Amplifier drain bias, need external 100pF, 1000pF capacitor.	200*150μm ²	

Refer to Appendix A for details.